



# TECHNICAL SPECIFICATION

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**Hardware-in-the-loop simulation test of power system stability control system**



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## Hardware-in-the-loop simulation test of power system stability control system

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The text of this Technical Specification is based on the following documents:

Draft	Report on voting
8C/157/DTS	8C/169A/RVDTS

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this Technical Specification is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/publications](http://www.iec.ch/publications).

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## **1 Scope**

This Technical Specification (TS) addresses the requirements for hardware-in-the-loop (HIL) simulation test of power system stability control system (see definition in 3.1.2). Its purpose is to provide guidelines encompassing the use of terms and definitions, as well as the objective and general requirements for HIL simulation test. The TS covers the test requirements, test system, test contents, and test quality management.

This TS improves the safe and stable operation of the power system.

## **2 Normative references**

There are no normative references in this document.

## Bibliography

IEC 60870-5-104:2006, *Telecontrol equipment and systems - Part 5-104: Transmission protocols - Network access for IEC 60870-5-101 using standard transport profiles*

IEC 61850 (all parts), *Communication networks and systems for power utility automation*

IEC 61850-9-2:2011, *Communication networks and systems for power utility automation - Part 9-2: Specific communication service mapping (SCSM) - Sampled values over ISO/IEC 8802-3*

IEC TS 63384-1:2023, *Power system stability control - Part 1: Guideline for framework design of power system stability control*

IEEE Std 2004-2025, *IEEE Recommended Practice for Hardware-in-the-Loop (HIL) Simulation-Based Testing of Electric Power Apparatus and Controls*

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